



ORIGINAL

14500 Avion Parkway, Suite 300
Chantilly, VA 20151
(703) 818-1000
(703) 818-8813 FAX
www.techlawinc.com

DCNROC3-TO6-FD-648

April 5, 2007

Mr. Robert Thomson
Remedial Project Manager
3HS11
EPA Region 3
1650 Arch Street
Philadelphia, PA 19103-2029

Reference: EPA Contract No. EP-S3-04-03; EPA Task Order No. 006; Radford Army Ammunition Plant, Montgomery and Pulaski Counties, Virginia; Final Visual Characterization Work Plan for the Flow Laboratory Site; Task 4.1 Deliverable.

Dear Mr. Thomson:

Enclosed please find the Final Visual Characterization Work Plan for the Flow Laboratory Site. The task-specific health safety plan is also included as Attachment B. Per your request, a hard copy of this final work plan will also be sent to (b) (4) of Marbal, Inc.

This deliverable is being forwarded to you through electronic mail (via the Internet) in Adobe Acrobat PDF format. Hard bound copies will be submitted via U.S. regular mail. We appreciate this opportunity to assist EPA Region 3, and look forward to providing continued support. Should you have any questions, please call me at (703) 818-3244.

Sincerely,

Mohamed Nur
Regional Manager

cc: J. McKenzie, EPA RPO
D. Harris, VADEQ
R. Sherfey/TL Central Files

Radford Army Ammunition Plant

Final Visual Characterization Work Plan for the Flow Laboratory Site

Submitted
To

Mr. Robert Thomson
Remedial Project Manager
U.S. EPA Region 3
1650 Arch Street, 3HS11
Philadelphia, PA 19103-2029



Submitted
By

TechLaw, Inc.
14500 Avion Parkway
Suite 300
Chantilly, VA 20151



•	EPA Task Order No.	006
•	Contract No.	EP-S3-04-03
•	TechLaw PM	(b) (4)
•	EPA RPM	Robert Thomson Telephone No. (215) 814-3357

April 5, 2007

DCNROC3-TO6-FD-648

**RADFORD ARMY AMMUNITION PLANT
PULASKI AND MONTGOMERY COUNTIES
VIRGINIA**

**FINAL VISUAL CHARACTERIZATION WORK PLAN
FOR THE FLOW LABORATORY SITE**

Submitted to:

Mr. Robert Thomson
Remedial Project Manager
U.S. EPA Region 3, 3HS11
1650 Arch Street
Philadelphia, PA 19103-2029

Submitted by:

TechLaw, Inc.
14500 Avion Parkway
Suite 300
Chantilly, VA 20151-1101

EPA Task Order No.	006
Contract No.	EP-S3-04-03
TechLaw PM	(b) (4)
Telephone No.	(b) (4)
EPA RPM	Robert Thomson
Telephone No.	215/814-3357

April 5, 2007

I. INTRODUCTION

TechLaw Inc. (TechLaw) has been tasked by the U.S. Environmental Protection Agency (EPA) to develop and implement a scope of work to visually characterize the nature and extent of the material contained in previously identified waste disposal areas at the Former New River Storage Depot (NRSD), Flow Laboratory Site (FLS) located in Pulaski, Virginia. A map of the FLS is provided in Attachment A, Figure 1, Site Location Map.

The planned activities include establishing a grid system for visual identification of waste materials (primarily medical-grade glassware) at two known distinct waste disposal areas/suspect trenches identified on Figure 2 of Attachment A. The exact location of each suspect trench will be verified in the field. A task-specific Health and Safety Plan is included as an Attachment B to this Visual Characterization Work Plan.

II. BACKGROUND/SITE DESCRIPTION

A. Location/Description

The NRSD (also known as the New River Ordnance Plant) is located in Pulaski County, Virginia, near the community of Dublin. The NRSD originally consisted of 3,840 acres. Currently, a total of 2,813 acres are still operated as part of the Radford Army Ammunition Plant. The remaining acres, which were deeded or transferred to other owners or users, include the FLS, which is currently owned by Marbal, Inc.

The FLS lies on 114 acres and has numerous preexisting facilities connected by multiple roadways. Surrounding the abandoned facilities is hilly terrain which contains numerous trenches. The focus of this work plan is the two areas identified as "Investigation Area 1" and "Investigation Area 2" on Figure 2. Investigation Area 1 is located east-northeast of Load Line No. 4 buildings 471/472/473 and includes at least five suspect trench areas, a small horseshoe-shaped pit, and two dump areas near the pit. Investigation Area 2 is located to the east-southeast of Load Line No. 3 buildings 447/445 & 434/435 and includes several suspect trench areas.

B. New River Storage Depot History

The history of the NRSD dates back to the American Revolution. During WWII, the need for increased munitions production was the basis for opening the New River Ordnance Plant. The Government operated the plant under contract with Hercules Powder Co. of Wilmington, Delaware. The mission of this facility was the loading of propellant and igniter charges and the manufacture of the bags used for such charges.

During the post-war period, the War Assets Administration began disposal of portions of the former NRSD, starting as early as 1947-48 and continuing through 1978. Approximately 1,000 acres in the western portion of the original facility (including the FLS) had been sold or transferred during this period.

C. Flow Laboratory Site History

The FLS appears to have begun activities on site approximately 1970. This facility was owned and operated by Flow General Company (Flow General), under the direction of their regional headquarters located in McLean, Virginia. Flow General operated nationwide and in 18 countries around the world. Their products included cell cultures, blood cells, bacteriological products, selected viral reagents, plastic labware, and instrumentation. In 1999, Gannett Fleming, Inc. discovered a 1983 product catalog during a site reconnaissance, which described the operations conducted at the Dublin facility. The catalog indicated that the FLS had the space and facilities to house all types of large and small animals. Complete blood cell product services, including selection, housing, and care of animals, test bleedings, inoculation, blood collection and serum preparation, according to requested customer protocols, were provided. Evidence of labware, petri dishes, sample vials, sample labels, and syringes were found during the site reconnaissance conducted by Gannett Fleming, Inc.

D. Previous Investigations

EPA and TechLaw conducted a site reconnaissance on November 20, 2001. During this site reconnaissance visit, numerous trenches and mounded features were found in wooded area located in the north/north west corner of the FLS, the area referred to Investigation Area 1 in this work plan.

In April of 2002, TechLaw conducted a sampling event to evaluate suspect and previously disturbed areas of the FLS, which were identified as suspect trenches. Sampling locations were based on information collected during the November 2001 reconnaissance visit. Three soil horizons (0-6 inches (in), 0-4 feet (ft), and 4-8 ft) were sampled during the April 2002 event. Sampling included the collection of approximately 42 surface and subsurface samples from 13 locations within Investigation Area 1, which included 5 identified trench areas, 2 dump areas, and the horse shoe pit area.

Samples were analyzed for the Contract Laboratory Program (CLP) Toxic Compound List (TCL) organics and Target Analyte List (TAL) metals. The analytical results from this sampling investigation were compared to several screening criteria, which included the EPA Region 3 Risk Based Concentrations (RBCs) for soil ingestion using residential and industrial scenarios, background concentrations, and BTAG values.

Results indicated that inorganics were the most frequently detected constituents in the soils. Aluminum, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, vanadium, and zinc exceeded one or more screening criteria. Aluminum, arsenic, iron and vanadium exceeded the RBCs for soil ingestion in a residential scenario.

Semi-volatile organic compounds (SVOCs) were also detected, with chrysene, fluoranthene, and pyrene exceeding the EPA Region 3 BTAG values. Pesticides were detected, however only alpha-BHC exceeded the EPA Region 3 Soil Screening Levels (SSLs). Surface soils

had to be re-sampled for volatile organic compounds (VOCs) due to missed holding times with the first set of samples and resulted in the detection of trichlorofluoromethane in only 2 of the 14 samples collected. Based on these results, sub-surface samples were not collected for VOC analysis.

A subsequent preliminary assessment of the FLS was conducted by the Army Corps of Engineers contractor, Versar, Inc. It was during this assessment that new suspect trenches similar to the ones identified at Investigation Area 1 were discovered in the wooded area near Load Line No. 3 buildings. TechLaw was then tasked with further investigating the newly identified waste disposal area, Investigation Area 2 and checking the contents of freezers left in the abandoned buildings at the FLS. TechLaw conducted a site visit on April 27, 2006 in which a thorough inspection of all the wooded areas, including areas that had been explored in the past was conducted. Several pictures were taken to note where trenches were discovered and to document the land features and types of debris and glassware seen on the surface. In addition, all the buildings at Loading Lines No. 3 and No. 4 were inspected. One freezer in Building 10 by Loading Line No. 4, one freezer located in another one of the Loading Line No 4 buildings, and a freezer in Building 12 were inspected. Nothing was found in any of the freezers, and it appeared they were swept clear before abandonment.

III. PROJECT DESCRIPTION

A. Objectives and Data Use

The objective for this visual inspection event is to characterize the types and amounts of suspect glassware or other laboratory-related items within disturbed areas of Investigation Area 1 and Investigation Area 2 at the FLS, as depicted on Figure 2 in Attachment A.

B. Scope of Work

TechLaw will conduct a site visit for the purposes of conducting a visual characterization of waste disposal areas at the FLS. TechLaw will establish a grid pattern at each identified trench, pit, or dump area within the Investigation Areas 1 and 2 at the FLS. Each grid will be geo-referenced using global positioning system (GPS) and photographed for the purposes of documenting the types of glassware or other laboratory type waste located at each grid. Special attention will be given to any suspect glassware that resembles those shown in Figure 3. No samples will be collected during this investigation.

TechLaw will contact the Marbal, Inc. plant manager, Mr. Eric Stump, to make arrangements for site access. TechLaw will also coordinate with Mr. Devlin Harris of the VDEQ for the site investigation activities.

IV. PROCEDURES

A. Investigation

The investigation will be conducted by TechLaw staff from April 16, 2007 to April 18, 2007. TechLaw staff will include a Site Lead/Site Safety Officer and one or two additional staff field team members.

A grid pattern for each of the trench areas within Investigation Area 1 and Investigation Area 2 will be established. Removal of bushes may be required in some areas before setting up the grid lines. Once the grid pattern has been established, each grid will be geo-referenced using a hand-held GPS unit and recorded in a field logbook. Because of the canopy of the trees in the area, GPS reading may be difficult with the hand-held unit. For more accurate geo-referencing, a high end Trimble or Magellan with a base station for post-processing calculations may be required.

Each grid location will be documented with a digital photograph and recorded in a photograph log. As necessary, minor surface soil excavation may be necessary to remove surface debris where parts of suspect glassware are partially covered by small amounts of earth material such as leaves or mounded dirt. Minor amounts of material (such as water, soil, or miscellaneous debris) may be removed using hand trowels, stainless steel spoons, or scoops and buckets. This visual characterization effort will not in any way involve the use of heavy equipment or require the excavation or movement of large amounts of soil. Visual observations will be logged in the field logbook to document any unusual findings and to supplement photographic evidence of what was found. Any labels found on the materials will be noted with grid reference in the field logbook. Of special importance will be the documentation of any glassware that still has physical contents intact, is plugged with wax, and/or has an unusual color, appearance, or odor (see Figure 3 for examples). If any items of this type are found, work will be halted and EPA will be notified immediately.

The grid layout and size of each grid will be determined in the field. However, generally a rectangular or a square grid will be placed on each suspect trench or disposal area; and based on the size of this grid, sub-grids will be established as shown in Figure 4. The nomenclature that will be used to identify each grid is as follows and as illustrated in Figure 4:

A1-T1-B1

A1 – identifies the investigation area

T1 – identifies the suspect trench or pit or dump area

B1 – identifies the grid location

B. Equipment Decontamination

All disposable personal protective equipment (PPE) and visual inspection equipment such as trowels, spoons, and scoops will be cleaned, air dried, double bagged and disposed as dry industrial waste. All non-disposable equipment will be cleaned with isopropyl alcohol

(rubbing alcohol will be used since no samples will be collected), followed by soapy water and rinsed with deionized water before moving to the next sampling location or leaving the site. Decontamination water will be put back in the area where the decontaminated equipment was used. Any materials found during the visual characterization will be left in place where they were found.

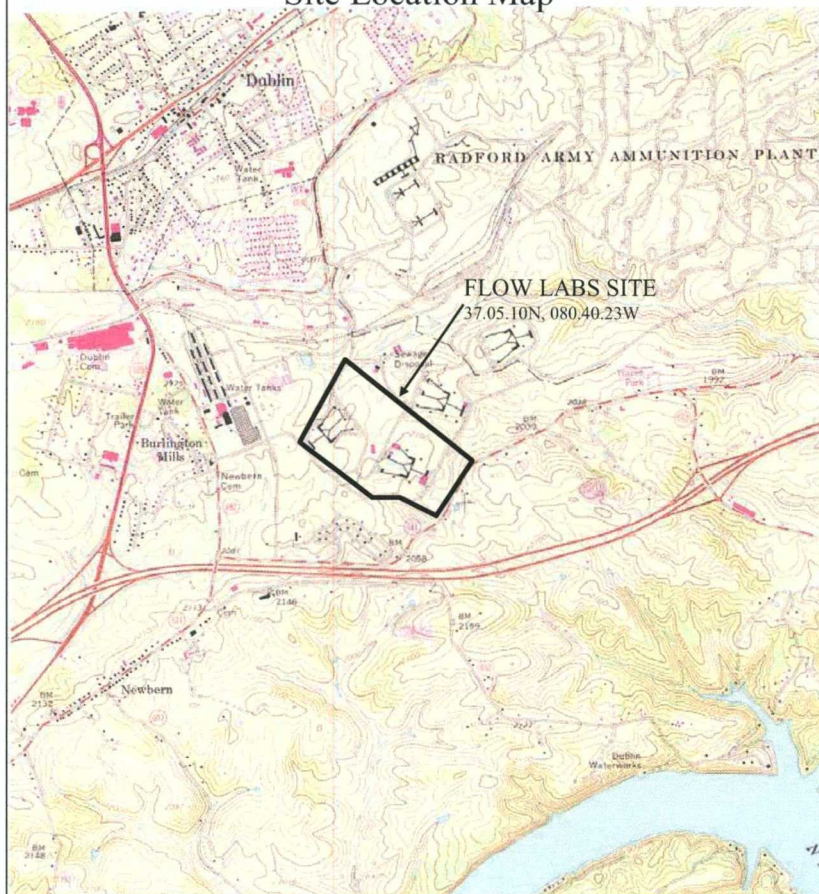
V. REPORTS

Information gathered from this visual inspection event will be compiled into a trip report. The report will include the geo-referenced grid locations and corresponding maps, digital photographs, descriptions of all notable observations, including documentation of suspect glassware or other laboratory waste, and a summary of any new findings. The trip report will be submitted to EPA upon completion.

ORIGINAL

ATTACHMENT A
FIGURES

Figure 1
Site Location Map

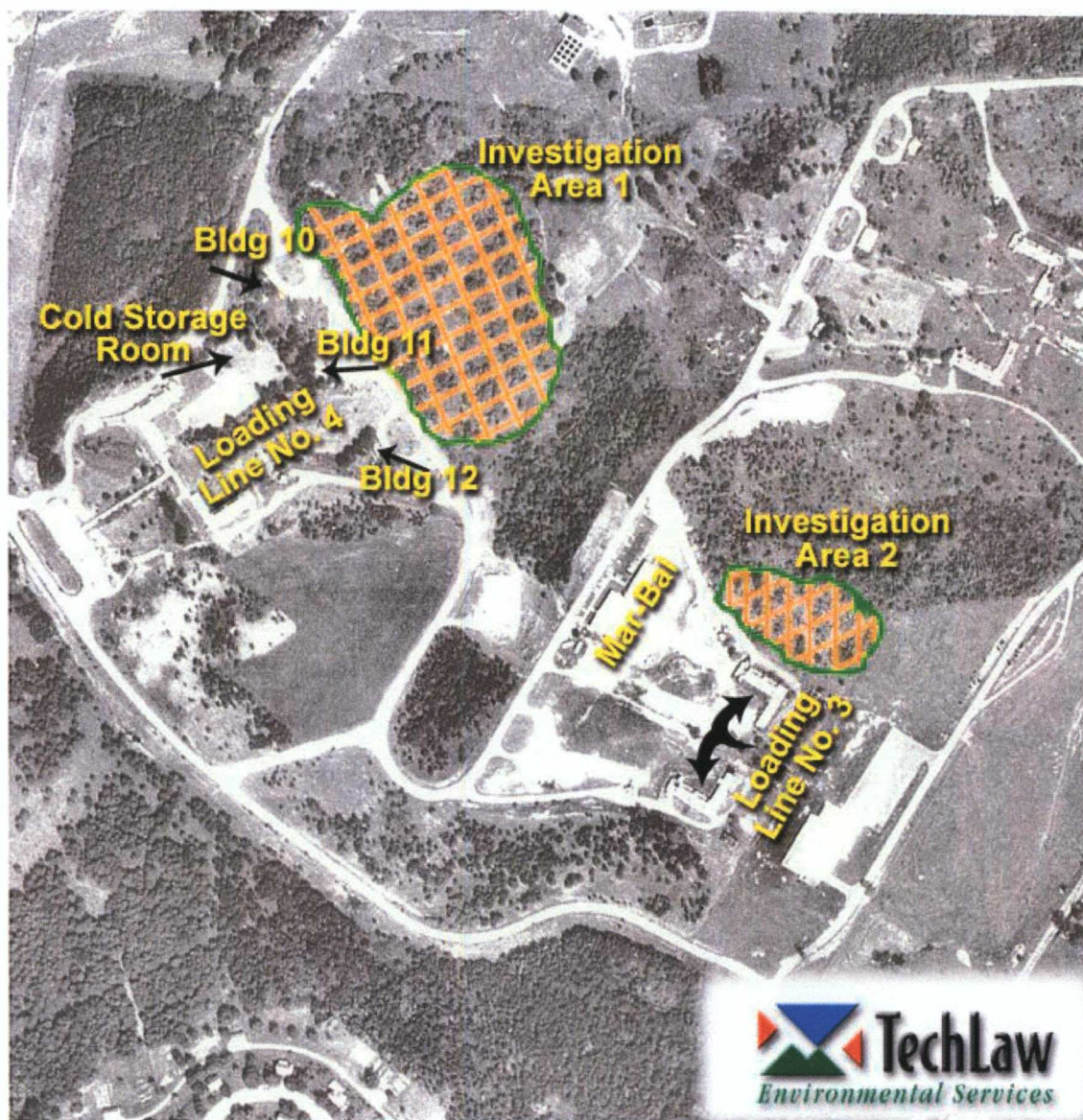


USGS Quad 1984 Dublin, Virginia Scale 1:24,000

Figure 2

Investigation Areas 1 and 2

ORIGINAL



ORIGINAL

Figure 3
Examples of Suspect Glassware

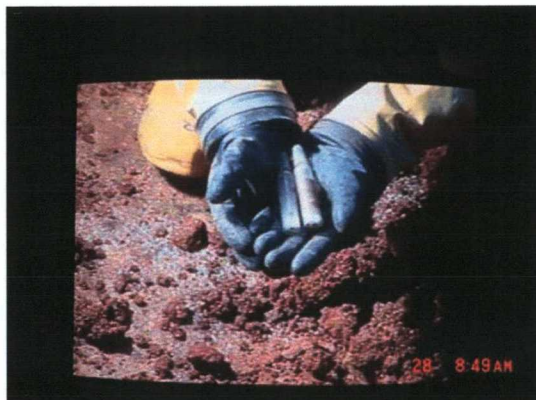
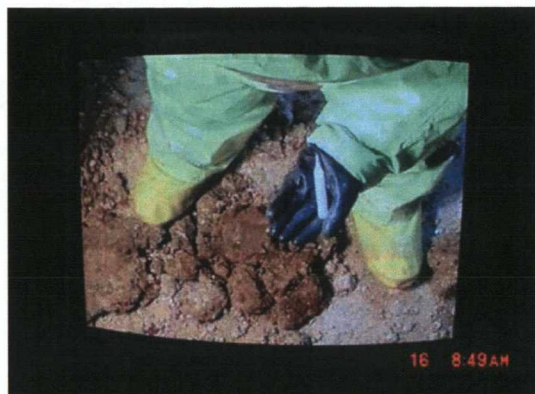


Figure 4
Example Grid Layout

Investigation Area 1, Trench 1

B	C	D	
			1
			2
			3
	A1-T1-C4		4
			5

- GPS reading location

The highlighted sub-grid cell will be identified as A1-T1-C4. The size of each sub-grid within a trench, pit or disposal area will be approximately similar. To save field time, a GPS reading of the outer nodes of the larger grid will be taken in the field and the measurements of each sub-grid will be used to generate the geo-reference for each cell.

If the grid is placed over the horse-shoe pit area, the middle field of the grid ID will be "P," for example, A1-P-C4. If it is placed at the two dump areas the ID will be "D1" or "D2," for example, A1-D1-C4 or A1-D2-C4.

The size of the sub-grids will be determined in the field based on the amount of material visually observed at each trench, pit or dump and the size of each area.



TechLaw
Quality & Integrity

ORIGINAL

ATTACHMENT B

**TASK SPECIFIC
HEALTH AND SAFETY PLAN**

**FLOW LABORATORY SITE
VISUAL CHARACTERIZATION**

Prepared by:

**TechLaw, Inc.
14500 Avion Parkway
Suite 300
Chantilly, VA 20151**

April 5, 2007

Approved:

TechLaw Health and Safety Officer

Date

Approved:

TechLaw EPA ROC 3 Program Manager

Date

Approved:

TechLaw Site Safety Officer

Date

ORIGINAL

TechLaw, Inc.
HEALTH AND SAFETY PLAN
FOR THE FLOW LABORATORIES SITE VISUAL CHARACTERIZATION

BACKGROUND/GENERAL INFORMATION

EPA Contract #: EP-S3-04-03 TASK ORDER #: 006

Incident/Site Name: FLOW LABORATORIES

Incident/Site Address/Location: 5400 Reserve Way, Dublin, VA 24084

I. Incident/Site Description/History:

The FLS lies on 114 acres and has numerous preexisting facilities connected by multiple roadways. Surrounding the abandoned facilities is hilly terrain which contains numerous trenches. The focus of this work plan is the two areas identified as "Investigation Area 1" and "Investigation Area 2" on Figure 2. Investigation Area 1 is located east-northeast of Load Line No. 4 buildings 471/472/473 and includes at least five suspect trench areas, a small horseshoe-shaped pit, and two dump areas near the pit. Investigation Area 2 is located to the east-southeast of Load Line No. 3 buildings 447/445 & 434/435 and includes several suspect trench areas.

The history of the NRSD dates back to the American Revolution. During WWII, the need for increased munitions production was the basis for opening the New River Ordnance Plant. The Government operated the plant under contract with Hercules Powder Co. of Wilmington, Delaware. The mission of this facility was the loading of propellant and igniter charges and the manufacture of the bags used for such charges.

During the post-war period, the War Assets Administration began disposal of portions of the former NRSD, starting as early as 1947-48 and continuing through 1978. Approximately 1,000 acres in the western portion of the original facility (including the FLS) had been sold or transferred during this period.

The FLS appears to have begun activities on site in approximately 1970. This facility was owned and operated by Flow General Company (Flow General), under the direction of their regional headquarters located in McLean, Virginia. Flow General operated nationwide and in 18 countries around the world. Their products included cell cultures, blood cells, bacteriological products, selected viral reagents, plastic labware, and instrumentation. In 1999, Gannett Fleming, Inc. discovered a 1983 product catalog during a site reconnaissance, which described the operations conducted at the Dublin facility. The catalog indicated that the FLS had the space and facilities to house all types of large and small animals. Complete blood cell product services, including selection, housing, and care of animals, test bleedings, inoculation, blood collection and serum preparation, according to requested customer protocols, were provided. Evidence of labware, petri dishes, sample vials, sample labels, and syringes were found during the site reconnaissance conducted by Gannett Fleming, Inc.

Subsequent to the site reconnaissance by Gannett Fleming, Inc., EPA and TechLaw conducted a site reconnaissance on November 20, 2001. During this site reconnaissance visit, numerous trenches and mounded features were found in wooded area located in the north/north west corner of the FLS, the area referred to Investigation Area 1 in this work plan.

In April of 2002, TechLaw conducted a sampling event to evaluate suspect and previously disturbed areas of the FLS, which were identified as suspect trenches. Sampling locations were based on information collected during the November 2001 reconnaissance visit. Three soil horizons (0-6 inches (in), 0-4 feet (ft), and 4-8 (ft) were sampled during the April 2002 event. Sampling included the collection of approximately 42 surface and subsurface samples from 13 locations within Investigation Area 1, which included 5 identified trench areas, 2 dump areas, and the horse shoe pit area.

Samples were analyzed for the Contract Laboratory Program (CLP) Toxic Compound List (TCL) organics and Target Analyte List (TAL) metals. The analytical results from this sampling investigation were compared to several screening criteria, which included the EPA Region 3 Risk Based Concentrations (RBCs) for soil ingestion using residential and industrial scenarios, background concentrations, and BTAG values.

Results indicated that inorganics were the most frequently detected constituents in the soils. Aluminum, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, vanadium, and zinc exceeded one or more screening criteria. Aluminum, arsenic, iron and vanadium exceeded the RBCs for soil ingestion in a residential scenario.

Semi-volatile organic compounds (SVOCs) were also detected, with chrysene, fluoranthene, and pyrene exceeding the EPA Region 3 BTAG values. Pesticides were detected, however only alpha-BHC exceeded the EPA Region 3 Soil Screening Levels (SSLs). Surface soils had to be re-sampled for volatile organic compounds (VOCs) due to missed holding times with the first set of samples and resulted in the detection of trichlorofluoromethane in only 2 of the 14 samples collected. Based on these results, sub-surface samples were not collected for VOC analysis.

A subsequent preliminary assessment of the FLS was conducted by the Army Core of Engineers contractor, Versar, Inc. It was during this assessment that new suspect trenches similar to the ones identified at Investigation Area 1 were discovered in the wooded area near Load Line No. 3 buildings. TechLaw was then tasked with further investigating the newly identified waste disposal area, Investigation Area 2 and checking the contents of freezers left in the abandoned buildings at the FLS. TechLaw conducted a site visit on April 27, 2006 in which a thorough inspection of all the wooded areas, including areas that had been explored in the past was conducted. Several pictures were taken to note where trenches were discovered and to document the land features and types of debris and glassware seen on the surface. In addition, all the buildings at Loading Lines No. 3 and No. 4 were inspected. One freezer in Building 10 by Loading Line No. 4, one freezer located in another one of the Loading Line No 4 buildings, and a freezer in Building 12 were inspected. Nothing was found in any of the freezers, and it appeared they were swept clear before abandonment.

ORIGINAL

Scope of Work:

TechLaw Inc. (TechLaw) has been tasked by the U.S. Environmental Protection Agency (EPA) to visually characterize the nature and extent of the material contained in previously identified waste disposal areas at the Former New River Storage Depot (NRSD), Flow Laboratory Site (FLS) in Pulaski, Virginia.

The planned activities include establishing a grid system for visual identification of waste materials (primarily medical-grade glassware) at two known distinct waste disposal areas/suspect trenches identified on Figure 2 of Attachment A. The exact location of each suspect trench will be verified in the field.

II. RESPONSE TEAM

TechLaw Field Team Leader: (Print name) (b) (4)

Signature: _____ Date: _____

TechLaw Site Safety Officer: (Print name) (b) (4)

Signature: _____ Date: _____

Team Member: (Print name) (b) (4)

Signature: _____ Date: _____

Team Member: (Print name) (b) (4)

Signature: _____ Date: _____

All teams members have current applicable HAZWOPER 29 CFR 1910.120 training, have been certified to have medical clearance for HAZWOPER work in accordance with 29 CFR 1910.120, and have passed qualitative fit tests in accordance with 29 CFR 1910.134 within the last 12 months. Signatures of team member indicate they have read and agreed to follow the provisions of this HASP. The team will conduct initial and daily safety meetings, plus any special safety meetings. The buddy system will be used. Team members that may potentially work at the FUDs sites listed in this plan have been listed below, along with the dates that the 40 hour OSHA training was completed for each individual. If other TechLaw, Inc. staff members are tasked to participate in the FUDs sites project, their names and dates that they completed OSHA training will be written in .

Personnel and Dates of 40-Hour OSHA Training

Name	Date of 40 hour OSHA training
(b) (4)	09/11/06
(b) (4)	
	03/06/92

III. SITE-SPECIFIC HAZARDS EVALUATION

Site-specific hazards will be evaluated and communicated to all TechLaw staff working on-site in accordance with TechLaw SOP 090701 Health and Safety Procedures Communications, SOP 090201 Preparation of a Health and Safety Plan, and SOP 090101 Completion of a Health and Safety Evaluation Checklist. It is the responsibility of the Site Health and Safety Officer to ensure that all known or suspected hazards for any given site are adequately identified and addressed by pre-entry planning/completion of the Health and Safety Evaluation Checklist and that all identified safety procedures are fully implemented. Pre-entry planning and hazard evaluation may involve reviewing documents detailing current and past operations and conducting personnel interviews with pertinent facility staff to ensure that all known or suspected hazards at the site have been identified. The Health and Safety Officer shall be responsible for employee training on the hazard communication standard and all pertinent safety procedures, and for overseeing the use of the buddy system, site control procedures, personal protective equipment, on-going site monitoring, and proper personnel and equipment decontamination according to the levels and types of hazards present and as written in the site-specific Health and Safety Evaluation Checklist. In addition TechLaw, Inc. maintains a medical surveillance program for the long-term monitoring of employees' health.

Contaminants of Concern: __ Primarily metals, some semi-volatile, pesticides, and one organic compound; however there is a potential for biological hazards

Routes of Exposure

Relevant routes of exposure for chemical hazards are determined using the TechLaw Chemical Table, revision 2, as provided in Section IV (see below), and applicable MSDS sheets maintained at TechLaw.

IV. HEALTH AND SAFETY EVALUATION CHECKLIST

Chemical Hazards:

☐ Explosive ☐ Corrosive ☐ Reactive ☐ Oxidizer ☐ Other: _____
☐ Flammable ☒ Toxic ☐ Water-reactive ☐ Radioactive ☐ Other: _____

Hazardous chemicals identified in the sampling and analysis event in April 2002 have been added to the Chemical Hazards Table below. The OSHA, NIOSH, and ACGIH exposure limits have been provided in the table, along with pertinent physical descriptions and health hazard symptoms of each of the identified chemicals. This information will be evaluated with all other potential hazards types identified at the site in order to make a determination of the level and type of personnel protective clothing, equipment, monitoring activities, decontamination requirements, and precautions that will be employed at the site.

It should be noted that sampling was not conducted in the newly-identified Investigation Area #2. However, it is not anticipated to be significantly different in contamination levels and types than what was found in Investigation Area #1.

CHEMICAL HAZARDS TABLE

CHEMICAL HAZARDS							
Chemical Name CAS #	OSHA PEL (TWA unless noted otherwise)	NIOSH REL (TWA unless noted otherwise)	ACGIH TLV® (TWA unless noted otherwise)	IDLH	Physical Description (for metals, description is provided for elemental form)	Health Hazard Symptoms	Ionization Potential eV
Aluminum	N/A	N/A	N/A	N/A	Soft, lightweight metal with normally a dull silvery appearance caused by a thin layer of oxidation that forms quickly when the metal is exposed to air	N/A – non-toxic	N/A
Arsenic	0.01 mg/m ³	C -0.002 mg/m ³ (15 minutes) Ca	0.01 mg/m ³ A1	100 mgm ³	Pure metal is silver-gray or tin-white, odorless solid, insoluble Incompatible with strong oxidizers, bromine azide, and hydrogen gas	Ulceration of nasal septum, dermatitis, GI disturbances, peripheral neuropathy, respiratory irritation,	N/A
Barium Barium – continued	0.5 mg/m ³	0.5 mg/m ³	0.5 mg/m ³	1100 mg/m ³	BaNO ³ , BaCl are white, odorless solids, incompatible with acids, oxidizers	Upper respiratory irritation, gastroenteritis, muscle spasm, slow pulse, extrasystoles, irritated eyes, skin burns, hypokalemia	Unknown
Beryllium	0.002 mg/m ³	0.0005 mg/m ³ Ca	0.002 mg/m ³ A2	10 mg/m ³ Ca	Pure metal, a hard, brittle, gray-white solid, insoluble, incompatible with acids, caustics, chlorinated	Respiratory symptoms, weakness, fatigue, weight loss	N/A

ORIGINAL

CHEMICAL HAZARDS

Chemical Name CAS #	OSHA PEL (TWA unless noted otherwise)	NIOSH REL (TWA unless noted otherwise)	ACGIH TLV® (TWA unless noted otherwise)	IDLH	Physical Description (for metals, description is provided for elemental form)	Health Hazard Symptoms	Ionization Potential eV
					hydrocarbons, oxidizers, molten lithium		
Cadmium	0.2 mg/m ³	Reduce to lowest feasible exposure	0.01 mg/m ³ inhalable particulate 0.002 mg/m ³ For respirable fraction of particulate matter A2	50 mg/m ³	Odorless, yellow- brown, finely divided particulate dispersed in air	Pulmonary edema, dyspnea, cough, chest tightness, substernal pain, headache, chills, muscle aches, nausea, vomiting, diarrhea, anosmia, emphysema	N/A
Chromium	0.5 mg/m ³	0.5 mg/m ³	0.5 mg/m ³	N/A	Appearance and odor vary, incompatible with water	Skin sensitization	N/A
Cobalt	0.05 mg/m ³	0.05 mg/m ³	0.02 mg/m ³ A3	20 mg/m ³	Odorless, silver-gray to black solid, incompatible with strong oxidizers, ammonium nitrate	Dermatitis, skin sensitization	N/A
Copper	1 mg/m ³	1 mg/m ³	1 mg/m ³ as dust and mists	N/A	Reddish, lustrous, malleable, odorless solid, incompatible with oxidizers, alkalis, sodium azide, acetylene	Irritated nasal mucous membrane, pharynx, nasal perforation, eye irritation, metallic taste, dermatitis	N/A
Iron	10 mg/m ³	5 mg/m ³	5 mg/m ³	N/A	Reddish-brown solid, incompatible with calcium hypochlorite	Benign pneumoconiosis	N/A
Lead	0.05 mg/m ³	0.1 mg/m ³	5 mg/m ³	700 mg/m ³	Soft, ductile gray, heavy metal, incompatible with strong oxidizers, hydrogen peroxide,	weakness, lassitude, insomnia, facial pallor, anorexia, malnutrition, constipation, abdominal pain, colic,	N/A

ORIGINAL

CHEMICAL HAZARDS

Chemical Name CAS #	OSHA PEL (TWA unless noted otherwise)	NIOSH REL (TWA unless noted otherwise)	ACGIH TLV® (TWA unless noted otherwise)	IDLH	Physical Description (for metals, description is provided for elemental form)	Health Hazard Symptoms	Ionization Potential eV
					acids	anemia, gingival lead line, tremor, paralysis of wrist and ankles, encephalopathy, nephropathy, irritated eyes, hypotension	
Magnesium	N/A	N/A	N/A	N/A	Silvery-white, light- weight metal (two thirds the density of aluminum). Slightly tarnishes when exposed to air, incompatible with water, hydrochloric acid in elemental form	N/A – non-toxic	N/A
Manganese	5 mg/m ³	1 mg/m ³	0.2 mg/m ³	N/A	Lustrous brittle, silvery solid, incompatible with oxidizers, and will react with water or steam to produce hydrogen	Parkinson's, asthenia, insomnia, mental confusion, metal fume fever, dry throat, cough, tight chest, rales, flu-like fever, low-back pain, vomiting, fatigue, malaise	N/A
Mercury	0.01 mg/m ³	0.01 mg/m ³	0.01 mg/m ³ (alkyl compound) 0.1 mg/m ³ aryl compound) 0.025 mg/m ³ (metallic compound)	10 mg/m ³	Appearance and odor vary depending upon specific compound, incompatible with strong oxidizers such as chlorine	Parasthesia, ataxia, dysarthria, vision/hearing distortion, spastic/jerky, dizziness, salivation, lacrimation, nausea, vomit, abdominal distress, skin burns, emotional distress	N/A

CHEMICAL HAZARDS

Chemical Name CAS #	OSHA PEL (TWA unless noted otherwise)	NIOSH REL (TWA unless noted otherwise)	ACGIH TLV® (TWA unless noted otherwise)	IDLH	Physical Description (for metals, description is provided for elemental form)	Health Hazard Symptoms	Ionization Potential eV
Nickel	0.1 mg/m ³ (soluble compounds) 1 mg/m ³ (metal/insoluble compounds)	0.015 mg/m ³ Ca	0.1 mg/m ³ (soluble compounds) 1 mg/m ³ (metal/insoluble Compounds, dust) A1	N/A	Lustrous, silvery solid, incompatible with strong acids, sulfur, selenium, wood & other combustibles, nickel nitrate	Headache, vertigo, nausea, vomiting, epigastric pain, substernal pain, cough, hyperpnea, weakness, cyanosis, pneumonitis, delirium, convulsions	N/A
Vanadium*	0.05 mg/m ³	C - 0.05 mg/m ³ (15 minutes)	0.05 mg/m ³	70 mg/m ³	Yellow-orange powder or dark gray, odorless flakes, incompatible with lithium chlorine trifluoride	Irritated eyes, green tongue, metallic taste, eczema, cough, fine rales, wheezing, bronchitis, dyspnea, irritated throat	N/A
Zinc	N/A	N/A	N/A	N/A	Moderately-reactive bluish-white metal, tarnishes in moist air and burns in air with a bright greenish flame, giving off plumes of zinc oxide. It reacts with acids, alkalis and other non-metals. If not completely pure, zinc reacts with dilute acids to release hydrogen	N/A – non-toxic	N/A
Coal Tar Pitch Volatiles Including: pyrene (129-00-0) chrysene (218-01-09) (NIOSH includes creosote and coal tar) 65996-93-2	0.2 mg/m ³ (benzene- soluble fraction)	Carcinogen 0.1 mg/m ³ (cyclohexane- extractable fraction)	0.2 mg/m ³ (benzene-soluble aerosol)	Carcinogen [80 mg/m ³]	Yellow to green crystalline structures	Dermatitis, bronchitis, [potential occupational carcinogen], kidney and liver	Properties vary with compound.

CHEMICAL HAZARDS							
Chemical Name CAS #	OSHA PEL (TWA unless noted otherwise)	NIOSH REL (TWA unless noted otherwise)	ACGIH TLV® (TWA unless noted otherwise)	IDLH	Physical Description (for metals, description is provided for elemental form)	Health Hazard Symptoms	Ionization Potential eV
Fluoranthene	None listed	None listed	None listed	None listed	Pale yellow needles or plates	Limited human data, possibly affects liver or GI tract	None listed
α-Hexachlorocyclohexane (319-84-6) (Isomer of Lindane) (Alpha-BHC)	0.5 mg/m³ as Lindane (skin)	0.5 mg/m³ as Lindane (skin)	0.5 mg/m³ as Lindane (skin)	50 mg/m³ as Lindane	White to yellow, crystalline powder with a slight musty odor (pesticide)	Irritation of eyes, skin, nose, throat; headache; nausea; dizziness	Unk
Trichlorofluoromethane (Fluorotrichloromethane; Freon®11; FC-11) 75-69-4	1,000 ppm	1,000 ppm (C)	1,000 ppm (C)	2,000 ppm	Colorless to water- white, nearly odorless liquid or gas (above 75°F)	Incoordination, tremor; dermatitis; cardiac arrhythmias, cardiac arrest; asphyxia. Liquid: frostbite	11.77

* Chemical exceeded the Risk-based Concentration (RBC) for soil ingestion in a residential scenario

Acronyms used or which may be used in completion of the Chemical Hazards Table

OSHA PEL – Occupational Safety and Health Administration Permissible Exposure Limit; enforceable OSHA standard; 29 CFR 1910 Subpart Z; TWA's for 8 hrs.; published periodically

NIOSH REL – National Institute for Occupational Safety and Health Recommended Exposure Limit; TWA's for up to 10 hrs.; second in hierarchy of HAZWOPER regulations; published periodically

ACGIH TLV – American Conference of Governmental Industrial Hygienists Threshold Limit Value; recommended values; TWA's for 8 hrs.; third in hierarchy of HAZWOPER regulations; published annually

TWA – Time-weighted average exposure concentration for a conventional 8-hour (TLV, PEL) or up to a 10-hour (REL) workday and a 40-hour workweek

STEL – Short-Term Exposure Limit. Usually a 15-minute TWA exposure that should not be exceeded at any time during a workday, even if 8-hour TWA is within the TLV-TWA, PEL-TWA, or REL-TWA

Skin- Danger of cutaneous absorption
(C) Ceiling – The concentration that shall not be exceeded during any part of the working day
NIC – TLV Notice of intended Changes
IDLH – Immediately Dangerous To Life or Health Concentration – a condition that poses a threat of exposure to airborne contaminants when that exposure is likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from such an environment. The purpose of establishing an IDLH exposure concentration is to ensure that the worker can escape from a given contaminated environment in the event of failure of the respiratory protection equipment. As a safety margin IDLH values were based on the effects that might occur as a consequence of a 30-minute exposure. However, the 30-minute period was NOT meant to imply that workers should stay in the work environment any longer than necessary, in fact EVERY EFFORT SHOULD BE MADE TO EXIT IMMEDIATELY!

CAS – Chemical Abstracts Service LEL-Lower explosive limit LFC – Lowest feasible concentration NA – Not applicable ND – Not determined Unk – unknown

A1 – ACGIH Confirmed Human Carcinogen

A2 – ACGIH Suspected Human Carcinogen

A3 – Animal Carcinogen

Ca – NIOSH Carcinogen

C – NIOSH Ceiling Limit (usually designated for 15 minute exposure)

Mitigation of Hazards: Site-specific chemical hazards will be evaluated and communicated to all TechLaw staff working on-site in accordance with TechLaw SOP 090701, Health and Safety Procedures Communications (Chemical Hazard Communication Program), SOP 090201, Preparation of a Health and Safety Plan, and SOP 090101, Completion of a Health and Safety Evaluation Checklist. It is the responsibility of the Site Health and Safety Officer to ensure that all known or suspected chemical hazards are adequately addressed by pre-entry planning, site control, use of personal protective equipment, on-going site monitoring (such as PIDs), and implementation of proper decontamination procedures according to the types and levels of chemical hazards present. The TechLaw Chemical Table, revision 2 contains a complete listing of chemicals that may be encountered at site visits and contains all information needed to accurately assess potential chemical hazards and required personal protective equipment. The Chemical Table, rev.2, and all SOPs can be accessed on the TechLaw intranet. UXO will be marked and avoided until cleared by a trained UXO technician.

Biological Hazards:

☒ Insects ☐ Animals ☒ Poisonous Plants ☐ Etiologic agents
☒ Snakes ☐ Other Reptiles ☐ Blood borne pathogens ☐ Other: _____

Mitigation of Hazards: Potential hazards identified for the Flow Labs site include contact with ticks carrying Lyme disease and contact with poisonous plants including poison ivy, poison oak, and poison sumac. However, risks are low due to the fact that the site visit is scheduled to occur in the winter. There is also a potential for stinging insects, and animals such as rattlesnakes, copperheads, and water moccasins to be present, however they are not anticipated because the site visit is scheduled in winter. Biological hazards will be mitigated through the use of protective clothing, i.e. steel-toed boots, pants, long sleeved clothing, and/or use of personal protective equipment such as gloves or goggles and outerwear as deemed appropriate by the Site Health and Safety Officer. It is the responsibility of the Site Health and Safety Officer to complete the Health and Safety Evaluation Checklist to ensure that biological hazards are adequately addressed through the use of pre-entry planning, site control measures, and as deemed appropriate, use of identified protective clothing and/or equipment.

Radiation hazards:

☐ Ionizing radiation ☐ NORM ☐ Non-ionizing radiation
Suspected radionuclides: _____

Mitigation of Hazards: Radiation hazards are not expected to be present at the Flow Labs site.

Physical hazards:

☐ Plane/helicopter
☐ Fire ☐ Explosion
☒ Cold Stress ☐ Heat stress ☒ Inclement weather
☐ Noise ☐ Hot process ☐ Active facility processes
☐ Traffic ☐ Railway traffic/debris ☐ Heavy equipment operations
☒ Uneven/rough terrain ☐ Excavation/trenching ☐ Work below grade
☒ Overhead obstructions ☐ Deteriorated structures
☐ Confined space (special training required for entry)
☐ Pressure systems ☐ Compressed gases
☒ Pit/pond ☐ Boat work ☐ Work over water
☐ Tanks ☐ Piles
☐ Manlift ☐ Work at elevation
☐ Utilities ☐ Electrical hazards
☒ Puncture ☒ Cut ☐ Poor visibility

☐ Other (describe): _____

Mitigation: Physical hazards will be mitigated through the use of site control measures; personal protective equipment which will include steel-toed shoes, tyveks, and chemical/physical protective gloves in accordance with the chemical hazards table and physical hazards identified at the site; signage and effective communication strategies for identification of on-site hazards; management of cold stress; and many others. It is the responsibility of the Site Health and Safety Officer to ensure that all known physical hazards are identified and adequately addressed by the site Health and Safety plan/checklist. Workers should take frequent breaks, drink plenty of fluids, and watch for signs of cold stress. A vehicle will remain on site to provide temporary shelter for cold stress if necessary.

Special precautions:

Work will require walking through terrain which has numerous trenches and a somewhat uneven and hilly landscape with lots of foliage. Care should be taken to walk slowly and carefully so as to avoid tripping on uneven terrain or on branches and overgrowth of foliage. Additionally, the work will involve some brushing aside and moving of small amounts of foliage and surface media (small rocks and soil) to expose discarded glassware. Care should be taken to avoid getting cuts and scrapes from potentially broken glassware and thorns or needles from indigenous plants and pine trees. Protective steel-toed boots and a tough outer glove placed over chemical-protective gloves will be worn for protection.

Ordinance/UXO/Discarded Military Munitions Hazards:

Mitigation: Ordnance/UXO and discarded military munitions are not anticipated at the Flow Labs site.

Underwater Hazards:

- | | | |
|---|---|--|
| <input type="checkbox"/> Poisonous Fish, i.e. jelly fish, sea urchins, others | <input type="checkbox"/> Animals | <input type="checkbox"/> Poisonous plants |
| <input type="checkbox"/> Etiologic | | |
| <input type="checkbox"/> Snakes | <input type="checkbox"/> Reptiles | <input type="checkbox"/> Blood borne pathogens |
| <input type="checkbox"/> Other: _____ | <input type="checkbox"/> Munitions of Environmental Concern | |

Mitigation: No activities are planned to be conducted in water or underwater as part of the visual characterization project at the Flow Labs site.

PERSONAL PROTECTIVE EQUIPMENT

Task	Anticipated PPE Level	Type of Chemical Protective Clothing	Type of Inner, Outer Gloves; Boot Covers	Respirator Type (SCBA/APR); APR Cartridges
Site entry	Level D	Tyvek, steel-toed boots, puncture-resistant glove worn over a chemical-resistant glove	Outer glove – Silver Shield for chemical protection Inner glove – Heavy Latex or leather for puncture-resistance	None
Decontamination	Level D	Tyvek, steel-toed boots, chemical-resistant gloves	Silver Shield glove for chemical protection	None.
Other:				

DECONTAMINATION PROCEDURES

Personnel: ☐ None ☐ Dry ☒ Wet (describe) Soap and water used to remove any contaminants

Equipment: ☐ None ☐ Dry ☐ Wet (describe) _____

Samples: ☐ None ☐ Dry ☐ Wet (describe) _____

PPE for personnel assisting with decontamination:

☒ Level D ☐ Level C ☐ Level B ☐ Level A ☐ Modified other: _____

Disposal of decontamination waste and used PPE: TBD

SAMPLING

Samples collected:

☐ Yes ☒ No (If yes, complete information below):

Media: ☐ Soil Gas ☐ Soil ☐ Groundwater ☐ Surface water ☐ Sediment ☐ Drum/tank

☐ Other: _____

Equipment:

Surface Water (SOP 08 02 00, Surface Water Sampling and Analysis Procedures):

- ☐ Transfer devices (i.e. stainless steel or glass beakers) ☐ Pond Samplers ☐ Lemmerer ☐ Coliwassa
☐ Bacon Bombs ☐ Other: _____

Ground Water (SOP 06 04 00, Groundwater Sampling-Monitoring Sampling Activities, SOP 06 06 00 Low Flow Purging and Sampling Procedures)

- ☐ Pump ☐ Bailer ☐ Low flow pump ☐ Other pump ☐ Hydro punch ☐ Direct Push technology
☐ Other: _____

Soil or Soil Gas (SOPs 07-03- 00, 07- 04-01, 07-05-01, 07-06-01)

- ☐ Trowel/spoon ☐ Scoop ☐ Drum thief/coliwassa ☐ Auger ☐ Slam bar ☐ Split spoon
☐ Shelby Tube ☐ Direct Push Technology ☐ Dredge ☐ Other: _____

MONITORING ACTION LEVELS

Hazard	Monitoring Equipment	Action Level	Action
Explosive atmosphere	Explosimeter or multiple gas monitor with explosimeter	< 10 % LEL 10–25 % LEL > 25 % LEL	Continue work Continue with caution Leave area
Oxygen	Oxygen meter or multiple gas monitor with oxygen sensor	< 19.5 % O ₂ 19.5-25 % O ₂ > 25 % O ₂	Leave; wear SCBA Continue work Leave area
Unknown organic vapors	Organic vapor monitor	<1 unit above background 1-5 units above background 5-500 units above background	Level D Upgrade to Level C Upgrade to Level B
Specific chemicals/classes	Toxic gas monitor; colorimetric tubes	Depends on exposure limit for chemical. Normally, at ½ of limit: If alarm activates:	Upgrade to Level C Leave area
Particulates	Particulate monitor	> 2.5 mg/m ³	Upgrade to Level C or implement engineering controls
Radiation*	Micro R meter	3x background to 1 mR/hr > 1 mR/hr	Work with caution Leave; consult H/S
Other:			

AIR MONITORING

Task	Monitoring Equipment	Upon Entry or Continuous	Periodic	Perimeter
Site entry	None Required			
Documentation				

Air Monitoring				
Sampling				
Decontamination				
Other:				
Other:				

COMMUNICATIONS

☐ Radio ☐ Cell phone ☐ Pager ☐ Hand signals ☒ Visual contact ☐ Air horn ☐ Vehicle horn

Site cell tel #'s: _____

EMERGENCY CONTACTS

Organization/Agency	Contact Name	Phone Number
Local hospital/clinic		See Section VI
Ambulance		911
Fire		911
Police		911
On-Scene Coordinator		TBD
Site Contact		TBD
TechLaw Program Manager	(b) (4) r	(b) (4)
TechLaw President	(b) (4)	(b) (4)
TechLaw Medical Consultant	(b) (4)	850-393-3163 (cell)
TechLaw Corp. H/S Officer	(b) (4)	(b) (4)
TechLaw Deputy Corp. H/S Officer	(b) (4)	(b) (4)
TechLaw Human Resources (Injuries/Workman's compensation, vehicle accidents, property ins.)	(b) (4)	(b) (4) weekdays
Travelers Insurance (if Kathy Bills not available)	Injuries, auto, property ins.	800-238-6225 (nights, weekends, holidays)
TechLaw workman's compensation policy #: YJUB9605936		
Facility Contact	John Treese, Plant Manager	540-674-5320

TBD – To Be Determined

Medical emergency facility: (Attach map) See Attachment I

Name: _____

Address: _____ Tel.: _____

Route to facility: _____

HASP PREPARATION AND REVIEW

HASP Prepared by: _____ (b) (4) _____ Date: 3/16/2007

HASP reviewed by: _____ Date: _____

V. SITE CONTROL

Site control measures include the use of maps and pre-entry planning to delineate the work areas; establish of work zones, i.e. hot or contaminated zone, d-con zone, and cold or clean zone; implement a communications plan for effective and clear communication; require use of the buddy system and use of standard operating procedures for mitigation of hazards; and provide an emergency medical plan.

Maps and Pre-entry Planning

Maps of the site will be reviewed in conjunction with the work planning and hazard identification requirements to establish how work will occur at the site.

Work Zones

It is the responsibility of the Site Health and Safety Officer to determine if the establishment of work zones will need to be implemented. The D-con zone should be established at a minimum of 25 feet from the hot zone (contaminated area). Only personnel that are trained in site safety and meet the minimum OSHA requirements delineated in 20 CFR 1910.120 for on-site hazardous waste workers will be allowed into the D-con and Hot/contaminated work zones.

Communications Plan

All health and safety plans and communication procedures conducted at the site will follow TechLaw, Inc.'s SOP 090701, Health and Safety Procedures Communications.

Use of the Buddy System and Relevant SOPs

A significant part of any site health and safety plan is the requirement to use the buddy system, and to ensure all relevant SOPs are followed. The Site Project Manager and Site Health and Safety Officer will be responsible for oversight of these quality and safety requirements.

Decontamination

Decontamination will occur for those site visits in which personnel perform work in a contaminated work zone. Personnel decontamination will be performed in accordance with TechLaw Inc.'s SOP 090801, Personnel Decontamination, and in accordance with the requirements of the Health and Safety Evaluation checklist.

VI. EMERGENCY RESPONSE PLAN

Emergencies may include, but are not limited to personal injury, detection of chemical concentrations above established safety limits (see Health and Safety Evaluation Checklist), signs or symptoms of exposure to chemicals or biological agents, or signs of heat or cold stress.

Alerting

Three horn blasts of the vehicle horn will indicate an emergency. All personnel will stop work immediately and return to the vehicle. The EPA Region 3 Remedial Project Manager will be notified immediately.

Additionally, should any vials or other containers be found to contain an unknown substance or resemble the containers shown in the pictures in Appendix I of the Work Plan for Visual Characterization, all personnel will stop work and immediately return to the vehicle. The EPA Region 3 Remedial Project Manager will also be notified immediately under these circumstances.

Responsibility

The Site Health and Safety Officer will be responsible for directing personnel in the event of an emergency. A vehicle will be ready for emergency use at all times while personnel are in the D-con and/or hot zones. The Site Health and Safety Officer will be responsible to maintaining site control.

First Aid Procedures

- Should hazardous substances be discovered during the visual characterization activities, the exposed individual will be immediately transferred to the Decontamination Zone and be decontaminated. Personal safety should be the first priority. Relay any exposure information to the appropriate emergency contact and include the site location, a description of what happened, the chemical to which the victim was exposed, the amount of chemical to which the victim was exposed, and the associated toxicity and potential problems resulting from exposure to the chemical (see the attached NIOSH *Pocket Guide to Chemical Hazards*).
- Skin Contact: While protecting yourself from further exposures, safely remove the victim's contaminated clothing and wash immediately with copious amounts of soap and water. (Water contact is contraindicated in the treatment of certain chemicals; although this is rare, see the attached MSDS to confirm that water application is indicated). Monitor the victim for abnormal signs or symptoms (see below). Seek medical assistance for abnormal observations or concerns (see below).
- Inhalation: If possible without subjecting yourself to the hazard, remove the victim from the contaminated atmosphere. If scene safety is unknown, do not enter the hazard area. (If the victim is unresponsive or incapable of leaving the area on his/her own, dispatch emergency response teams.)

Once the victim is removed from the contaminated area, dispatch the emergency medical service if the victim is unstable. Monitor the victim's airway, breathing, and pulse. If knowledgeable of practices, provide airway opening maneuvers, artificial respirations, and chest compressions as necessary until medical personnel arrive. If the patient is stable, consider transport to hospital by privately owned vehicle.

- Ingestion: Do not induce vomiting. Contact the Poison Control Center for guidance.

Emergency Contacts

The route to the nearest hospital, Radford Community Hospital, is contained in Attachment I. The phone numbers of relevant hospital and emergency response personnel are included below.

Radford Community Hospital, VA 51 1 st St., Radford, VA 24141	540-731-2685
---	--------------

Rescue Squad Phone:	911
---------------------	-----

Fire/HAZMAT Department Phone:	911
-------------------------------	-----

Robert Thomson Remedial Project Manager EPA Region 3	215-814-3357
--	--------------

State Police:	800-542-5959
---------------	--------------

Hazardous Materials Emergency:	911
--------------------------------	-----

National Response Center (Pollution, toxic chemical and oil spills)	800-424-8802
--	--------------

Center for Disease Control (CDC)	404-639-3311
Poison Control Center (Blue Ridge)	800-451-1428

Poison Control Center (Medical College of Virginia)	804-828-9123
---	--------------

Chemical Transportation Emergency	800-424-9300
OSHA	800-321-6742

VII. SAFETY PROCEDURES AND PRACTICES

Forbidden Activities

None are anticipated for this site visit

Air Monitoring

Air monitoring will not be required for this site visit.

Health Monitoring

Team members should observe each other for the following indicators of toxic effects:

- changes in skin complexion (skin color and temperature)
- changes in speech pattern
- changes in demeanor or level of consciousness
- coordination or dexterity problems
- excessive salivation or pupillary response (constriction or dilation)

Team members should be alert to changes in their own condition such as headache, weakness, nausea, dizziness, numbness, blurred vision, cramps, chest pain or tightness, or irritation of the eyes, skin, or respiratory tract (including coughing or difficulty breathing).

Communication

Any work team shall maintain voice communication with another party.

Standard Safety Practices

- No eating, drinking, or smoking is allowed in the exclusion or D-con zones or before D-con has been completed.
- No person shall work alone or be left alone in an exclusion zone.
- If PPE is ripped or torn where contact with contaminated material is possible, work shall stop until it is replaced.
- Hands and face should be thoroughly washed before eating, drinking, smoking, and before contact with the skin.

Attachment 1

Directions from Fort Pickett Military Reservation and Army Airport to Johnston Willis Hospital, Blackstone, VA 23824

Start	5400 Reserve Way Dublin, VA 24084
End	Radford Community Hospital 51 1 st St., Radford, VA 24141
Travel	8.2 mi (about 12 mins)
Directions:	
1.	Start on US-11, go 7.8 mi
2.	Turn RIGHT (South-West) onto SR-232 (1 st St.) – go 0.2 mi
3.	Bear LEFT (South-East) onto Randolph St. – go 0.2 mi
4.	End at Radford Community Hospital, 51 1 st St., Radford, VA

